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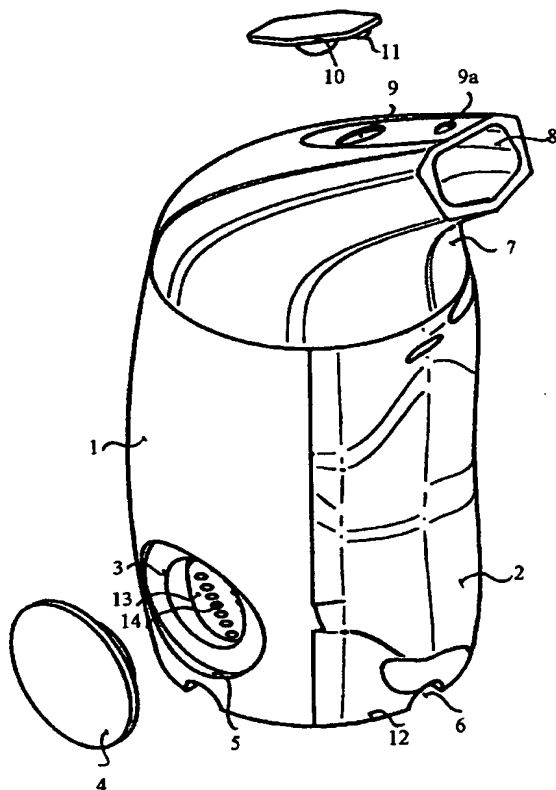
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(54) Title: INHALER APPARATUS FOR MITIGATING RESPIRATORY COMPLAINTS



(57) Abstract: The invention relates to an inhaler apparatus for mitigating respiratory complaints, comprising a house, salt holder space, filling, aspiration hole, base, and blocking member, the base is supplied with bottom holes, the blocking member is supplied with upper holes, there is a beak between the house and the aspiration hole. The invention is characterized in that a ventilating channel (6) is formed under the base (13), there is a filling opening (3) in the side of the house (1), and there is an exhaust opening (9) provided with a retaining valve (10) on the beak (7).

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

### **Inhaler Apparatus for Mitigating Respiratory Complaints**

The object of the invention is an inhaler apparatus for mitigating respiratory complaints,  
5 comprising a house, salt holder space, filling, aspiration hole, base and blocking member,  
the base is supplied with bottom holes, the blocking member is supplied with upper holes,  
and there is a beak between the house and the aspiration hole.

Several inhaler apparatuses are known in the prior art. The primary purpose of these  
10 apparatuses is to facilitate aspiration of powdered pharmaceuticals. Patent specification No.  
HU 213.187 describes an apparatus which contains a swirl chamber in the house containing  
the active ingredient, and the inlet of the apparatus is tangentially connected to it. The  
carrying agent of the active ingredient flows in through this inlet, while there is an outlet  
chunk at the other end of the chamber. The apparatus described in patent specification No.  
15 HU 210.758 comprises a stationary part and a rotary part, where the rotary part prevents the  
grains from clumping. The other function of the rotary part is to supply and loosen the  
active ingredient. Patent specification No. HU 171.644 and HU 213.661 describe  
apparatuses having special mechanisms for supplying the agent to be inhaled.

20 The common disadvantage of the above constructions is that they contain moving parts  
promoting movement and accurate supply of the active ingredient, as a result of which the  
apparatuses are complicated and the probability of failure is high.

Specification No. WO 01/45777 describes an inhaler apparatus for aspirating blister packed  
25 powdered products. Its disadvantage is that the agent quickly runs short from the apparatus,  
as only one portion can be used at one occasion.

Patent specification No. HU 220.182 describes an inhaler apparatus suitable for treating  
asthmatic complaints. The apparatus has a plastic house, a storage space, iodous salt crystal  
30 filling in the storage space, inlet and outlet openings, a metal screen and a beak. Its

characteristic feature is that the permissive cross section corresponding to at least one inlet opening is larger than the permissive cross section corresponding to the outlet opening. It has the disadvantage that the filling is precipitating on the metal screen, and further, if the apparatus is placed on wet table, the water is absorbed into the tank. It is also unfavourable  
5 that when the air is breathed out, it can get into the apparatus causing the salt to clump. Salt crystals of grain size smaller than 1.5 mm are especially disposed to clumping.

The object of the invention is to eliminate the disadvantages of the known constructions, and to develop an inhaler apparatus which contains no separate screen, which is made of  
10 natural material, prevents the humid air coming from the lungs get into the apparatus, the filling is ventilated, and if the apparatus is placed on a wet place, the filling does not contact with the wet surface.

The fundamental idea of the invention is that if we take the measures described in the  
15 principal claim, the result will be better than with the known constructions.

The problem is solved by the invention as described in principal claim 1. The characteristic features of the different embodiments are included in the subclaims.

20 The inhaler apparatus according to the invention has several advantages. Due to their size, the salt crystals are not disposed to clumping. Due to its light weight, the inhaler can be designed to be a small size portable apparatus as well. It contains no metal screen, so the probability of precipitation of the salt crystals is also reduced. The blow-back of air is prevented by a retaining valve. At the bottom it has a ventilation channel so that the salt  
25 crystals are ventilated, and further, its bottom is raised, so it is less exposed to moisture, e.g. if it is left on the kitchen table. Also for this reason the lower openings are smaller than the upper openings.

It is also favourable that the apparatus contains no plastic, the house is made of  
30 environment protecting ceramics and is ergonomically designed. Under the house there is a

surface promoting the binding of essential oils, which is advantageous for combined therapy. The apparatus is cheaper and more economical than the known ones. The major advantage of the apparatus is that, as it is experimentally shown, it is even suitable for substituting cave therapy.

5

In what follows, the invention is described in detail by presenting preferable embodiments, with reference to the accompanying drawings where:

- Figure 1 is an axonometric view of the apparatus,  
10 Figure 2 is the rear view of the apparatus,  
Figure 3 is a longitudinal section of the apparatus according to plane A-A shown in figure 2,  
Figure 4 is a sectional view of the apparatus according to plane B-B shown in figure 2,  
Figure 5 is the front view of the apparatus,  
15 Figure 6 is the lateral view of the apparatus,  
Figure 7 is the bottom view of the apparatus.

Figure 1 shows the house 1, the grip 2, the filling opening 3, the blocking plug 4, the adhesive layer 5, the ventilating channel 6, the beak 7, the aspiration hole 8, the exhaust opening 9, the hollow 9a, the retaining valve 10, the clamping boss 11, the bearing brim 12, the base 13, and the bottom holes 14. The grip 2 is ergonomically designed so as to facilitate grasping. The blocking plug 4 and the retaining valve 10 are shown as an exploded view. The clamping boss 11 of the retaining valve 10 is stack into the hollow 9a of the exhaust opening 9.

25

Besides the house 1, figure 2 shows the filling opening 3, the beak 7, the exhaust opening 9 and the ventilating channel 6. In addition, figure 3 shows the aspiration hole 8, the bearing brim 12, the base 13, the salt holder space 16 for the filling 19, and the upper blocking member 17. Figure 4 shows the upper blocking member 17 with the upper holes (18) in section.

30

Figure 5 shows the house 1, the ventilating channel 6, the beak 7 and the aspiration hole 8. Besides the house 1, figure 6 shows the filling opening 3, the ventilating channel 6 and the beak 7. Figure 7 shows the bottom holes 14 and the binding surface 15 of the base 13, the bearing brim 12 and the ventilating channel 6.

The house 1, the beak 7, the base 13 and the blocking member 17 form one unit, and are made of ceramics with the bottom holes 14 and the upper holes 18 left free. The filling 19 is at least 10 grams of salt crystals of grain size between 1,6 and 4,8 mm. The preferable composition of the salt crystals is: NaCl 98,7 %, CaCl<sub>2</sub> 0,13 %, CaSO<sub>4</sub> 0,1 %, MgCl<sub>2</sub> 0,028 %, and Fe<sub>2</sub>O<sub>3</sub> 0,00056 %. The salt crystals may contain traces of iodine and bromine as well. The filling 19 is placed in the apparatus through the filling opening 3, and than the blocking plug 4 made of silicone rubber is fixed with two-component resin-based adhesive.

The apparatus is used for inhalation by taking the beak 7 in the mouth. In case of supplementary therapy essential oils are placed on the bottom of the apparatus.

## CLAIMS

1. Inhaler apparatus for mitigating respiratory complaints, comprising a house, salt holder space, filling, aspiration hole, base, and blocking member, the base is supplied with bottom holes, the blocking member is supplied with upper holes, there is a beak  
5 between the house and the aspiration hole, **characterized in that** a ventilating channel (6) is formed under the base (13), there is a filling opening (3) in the side of the house (1), and there is an exhaust opening (9) provided with a retaining valve (10) on the beak (7).  
10
2. Apparatus according to claim 1 **characterized in that** the base (13) and the blocking member (17) are made of the same material with the house (1), preferably made of ceramics, and form an irresolvable unit with the house (1).
- 15 3. Apparatus according to claim 1 or claim 2 **characterized in that** the filling (13) comprises salt crystals containing calcium sulphate, calcium chloride, and at least 90 mass percent sodium chloride, the mass of the filling (13) is not less than 10 grams, and the diameter of the grains is between 1,6 and 4,8 mm.
- 20 4. Apparatus according to any of claims 1 - 3 **characterized in that** the overall size of the upper holes (18) is bigger than the overall size of the bottom holes (14).
5. Apparatus according to any of claims 1 - 4 **characterized in that** a binding surface (15) is formed on the bottom part of the base (13) promoting the binding of essential  
25 oils.
6. Apparatus according to any of claims 1 - 5 **characterized in that** the filling opening (3) is closed by a blocking plug (4) preferably made of silicone rubber, and the blocking plug (4) is preferably connected to the house (1) by a two-component resin-  
30 based adhesive layer.

7. Apparatus according to any of claims 1 - 6 **characterized in that** the retaining valve (10) is stack into the hollow (9a) of the exhaust opening (9) by a clamping boss (11), and the retaining valve (10) is preferably made of silicone rubber.
- 5
8. Apparatus according to any of claims 1 - 7 **characterized in that** there is a grip (2) formed on the house (1) designed to facilitate grasping.
- 10
9. Apparatus according to any of claims 1 - 8 **characterized in that** there is a bearing brim (12) under the house (1) forming one unit with it, protecting the base (13) from moisture.



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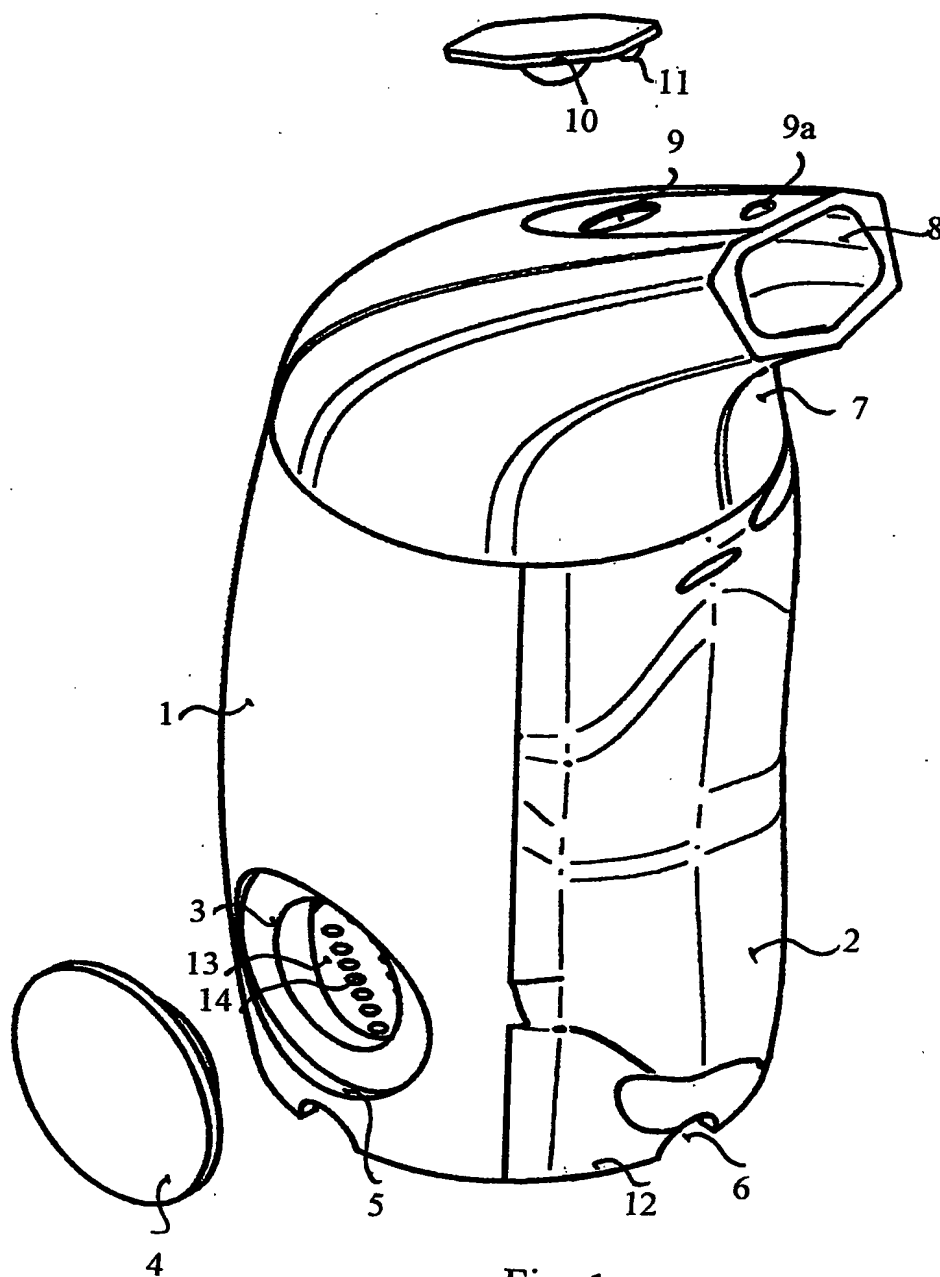


Fig. 1

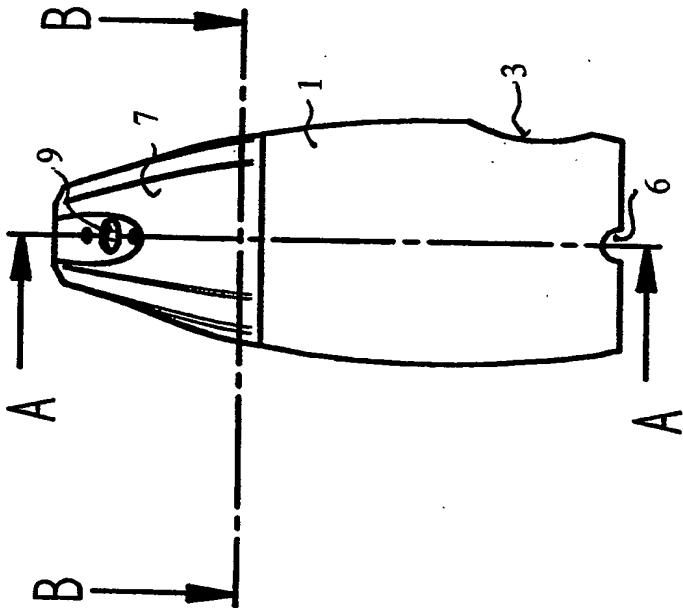


Fig. 2

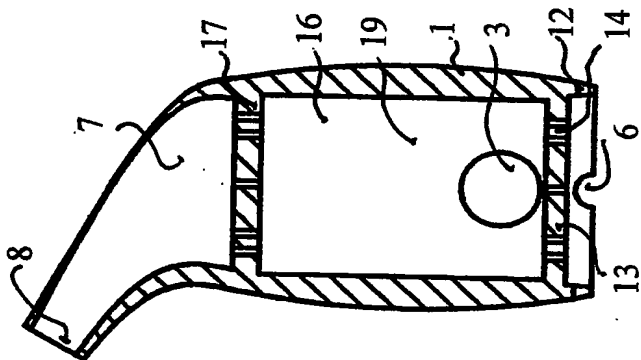


Fig. 3

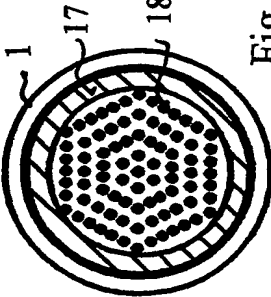


Fig. 4

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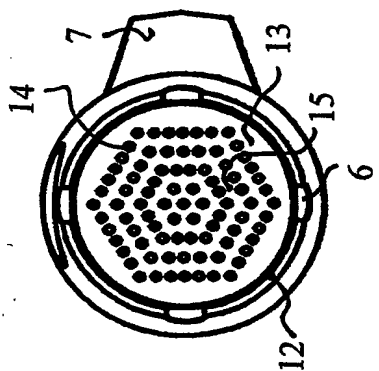


Fig. 7

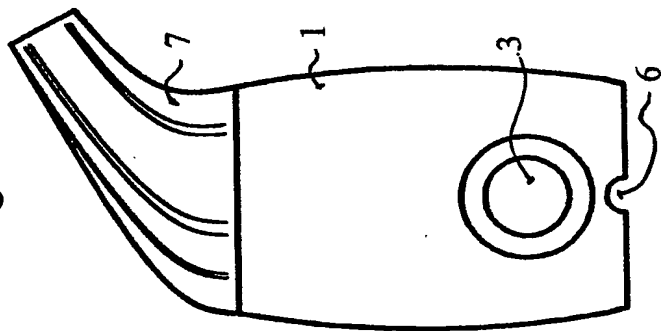


Fig. 6

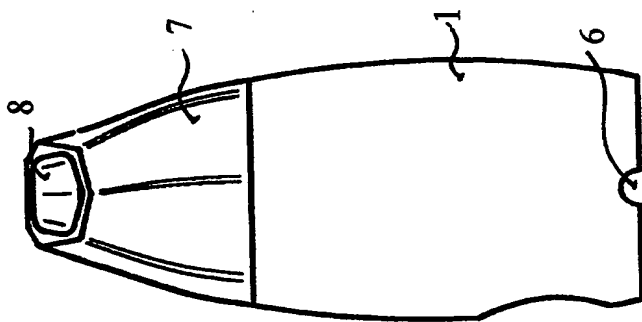


Fig. 5

# INTERNATIONAL SEARCH REPORT

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## A. CLASSIFICATION OF SUBJECT MATTER

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	US 2 503 732 A (HEISTERKAMP CHARLES A) 11 April 1950 (1950-04-11) the whole document ---	1-9
X	US 2 642 063 A (BROWN FRANK E) 16 June 1953 (1953-06-16) the whole document ---	1
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
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